DOCUMENT RESUME

IR 018 390

ED 408 977

AUTHOR Bazeli, Marilyn; Robinson, Rhonda

TITLE Creating Critical Thinkers.
PUB DATE Jan 97
NOTE 8p.; In: VisionQuest: Journeys toward Visual Literacy. Selected Readings from the Annual Conference of the International Visual Literacy Association (28th, Cheyenne, Wyoming, October, 1996); see IR 018 353.
PUB TYPE Guides - Classroom - Teacher (052) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Class Activities; Critical Thinking; *Critical Viewing; Curriculum Development; Elementary Secondary Education; *Learning Activities; Mass Media Role; Nonverbal Learning; Popular Culture; *Problem Solving; Relevance (Education); Skill Development; Visual Discrimination; *Visual Learning; *Visual Literacy

ABSTRACT

The inclusion of critical thinking and viewing skills across the curriculum is one way to approach the development of problem solving, which could help develop the kind of students prepared to accept the challenges they face. Using popular media in teaching such skills links critical thinking to life in a way that keeps critical thinking from being isolated or seeming too difficult for students. Viewing activities are motivating, challenging, fun, and can enhance communication skills among students while they develop their critical thinking skills. This paper suggests activities for using video analysis, television production, computers, and photography, as well as hands-on geometrical/reasoning tasks and activities that involve visual analysis of color and shapes of letters of the alphabet. Ideas are presented for implementing these activities in several curriculum areas. (AEF)

**********
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
**********

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ED 408 977

# Creating Critical Thinkers

by Marilyn Bazeli and Rhonda Robinson

## Abstract

The importance of critical thinking skills will only increase in the near future. Students need to have activities which encourage critical viewing and thinking in order to motivate their interest in learning thinking skills. This article suggests ideas for the inclusion of critical thinking across the curriculum.

## Introduction

Many of the educators involved in teaching the concepts, activities, and tools of visual literacy have faced the challenges of others who are not convinced of the value of the ideas. We have been often relegated to adding visual literacy to art, media, or language arts without being able to integrate the ideas of visual literacy across the curriculum. One way that the integration of visual literacy can be encouraged is through the importance of critical thinking and problem solving. We believe that many different activities which promote visual literacy can be accomplished by incorporating them within materials and activities across the curriculum which develop critical thinking.

Since students must be prepared to face the challenges of our global society, and the increasing demands placed upon them to solve serious problems in our culture, critical thinking skills are being proposed as an important part of the curriculum. "In a democracy, children need to be educated in ways that will assist them in creating the future, and not merely to exist in it" (Goodman, 1995, p. 5). Students must learn to be good communicators and to use higher order thinking skills to find solutions to ever more difficult problems.

The issues of our culture are presented visually each day in the media. Students must learn to critically consume these images in order to become better communicators. Visuals can inform or inflame. "It's important to raise children who are inquisitive and who make good judgments about the mass media's influence on them...to become sophisticated consumers..." (Mann, 1994, p. 2). Students who develop critical viewing and thinking skills are more prepared to solve the problems which face them. Critical thinking skills help students weigh the value of ideas, and to consider solutions and possibilities rather than merely accept information at face value.

Since so much of their world is a visual one, students should be encouraged to learn to receive, consider, critically analyze, and evaluate the information they receive through visuals. Critical thinking and viewing skills are necessary to help students understand what they see, since otherwise students may have a willingness to accept visual representations as accurate reflections of reality (Considine and Haley, 1992). Using visuals for the promotion of creative and analytic thinking has been promoted by Goldstone (1989). Her work supports the idea that visual analysis and critical thinking are an important part of the curriculum. And in our earlier work, Bazeli found that students are motivated and excited by studying visuals and critical thinking (1991). Her work showed that students are more positive and confident about critical thinking problems when they have experience with critical viewing activities and skills.

The following suggested activities are merely a beginning. Most educators should be able to use these ideas to create their own lessons and curricular changes. The inclusion of critical thinking and viewing skills across the curriculum is one way to approach the development of problem solving, which could help promote the type of students prepared to accept the challenges they face.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Alice D. Walker

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

IR018390



BEST COPY AVAILABLE

## Video Analysis

Using a variety of video analysis activities within the curriculum can help develop perception, interpretation, and discrimination skills. Lacy (1988), Limberg (1988) and Payne (1993) have all described ways that the use of television programs can help develop critical viewing and thinking. Guiding students to view and discuss the differences between fact and fiction, the effect of the violence they view, and the value of the news coverage they watch can help them become more critical thinkers. Television today makes the difference between information, edutainment, and entertainment more difficult to discern. Students need guided practice to discover the "reality" behind televised messages.

### Language Arts

Use clips of popular television programs to discuss the literary elements of narrative fiction. Introduce the traits of character, setting, plot, and resolution by discussing them through a variety of televised fictions, whether they are hour long dramas or half-hour situation comedies. Character can be introduced by looking at the programs without the sound, and discussing the elements of stereotyping evident within costumes, hair styles, and physical actions. More detail of character can be discussed by watching a segment of the drama and asking about the motivations, decision-making abilities, and ramifications of actions of characters.

Asking students to discuss the actions taken by characters, and predict their consequences, can help them determine the "reality" of fiction and its relationship to their lives. Seeing the development of the plot elements, and trying to predict how the plot will resolve itself, helps students analyze the development. Students could then be asked to describe the personality or characteristics of their favorite characters, filling the blanks in their character development. They could then be taught about scripting, and could he asked to develop activities and plot lines for their characters which would be fitting for the aspects of the character that they have recognized. Others could be assigned to read and critique the plots, asking whether or not the characters, as they understand them, would act in the way the students have written.

Analyzing the setting of programs helps students understand the importance of setting in fiction. Looking at how the rooms are created, the space is utilized, and the motion carried forward all help students understand the impact of setting. Students could be asked to describe and even draw the setting for a new program involving their favorite characters, or place their characters in an unusual setting and describe it fully. Watching how setting moves the action forward can help students understand that plot is involved with where, not just what happens.

### Social Studies

Critical viewing activities can help students discriminate between fact and fantasy. For instance, viewing videotapes of news events which have also been fictionalized in films or on television can spark discussion of the difference between reality and narrative creation. One example would be to show clips of an Apollo moon landing or other space footage and then show similar events as depicted in *Apollo 13*. Many news events are later depicted in made for television movies, such as the "The Burning Bed" type movie depicting violence in our culture. Other films have been made from true stories, such as teacher Louanne Johnson's *Dangerous Minds*, and then even later made into television programs or series. The comparison of fact, novelization, film and television programs can help students hone their critical skills in determining where truth and fiction differentiate. The students can also discuss the visualization of characters and events, and analyze how the visuals create the written story details and nuances.

Analyzing history can be effective when looking at the visuals available, for instance, on the World Wide Web from the National Library of Congress. Seeing the diaries, the original Depression photographs, and the many other visuals available bring history into the present in a way that helps students really consider the



BEST COPY AVAILABLE

difference between fact and fiction. Studying an era through its written history, its pictures, and its fictional depiction on films (such as the settling of the American West) can bring history and culture to life. Asking students to think about, discuss, and write details of differences noted in the books, articles, and then in documentaries such as The West or fictional versions such as Dancing With Wolves, can help them begin to critically look at the idea of living history.

### Reading

Many films and television programs have been based upon novels, plays, short stories, and even poetry. For years students have been comparing the differences between characterization, settings, plots, and resolutions to stories as presented in the different media of our culture. Asking students to write new endings, compare fiction and film, and analyze the strengths and weaknesses of each version can help them understand each better. Often, students can write reviews of a novel prior to seeing the film, then see the reviews of the film as written or broadcast by today's film critics. Comparison between students' analyses and the professionals can help sharpen their critical skills.

## Video Production

Following are some ideas for incorporating television production into various curricular areas (Bazeli & Heintz, 1997). As students plan their television production, they apply critical thinking skills to reach decisions, such as what to include visually and auditorially in their production, and the types of camera angles and shots.

### Math

A student prepares an instructional lesson, dealing with a particular math process that he/she has mastered. The lesson is then videotaped. Two critical thinking activities are involved: 1) the student preparing the lesson develops an even deeper understanding of the process during the preparation of the lesson, and, 2) other students can use the videotape to help them learn the process. When a peer explains a math process it can sometimes be understood better than when the teacher is doing all of the explaining. Further, the videotape can be played many times, giving additional instruction to the students.

### Science

The teacher sets up all necessary equipment for an experiment. Someone videotapes the teacher conducting the experiment with no verbal explanation. The videotape can then be used as a motivator to begin class, and, more importantly, to develop students' critical thinking regarding what they saw, why it happened, or what conditions caused it to happen. For example, a simple experiment involving the concept of air pressure, the familiar "crushing of a can" experiment, can be videotaped. As students view the videotape of the can magically collapsing before their eyes, with no visible force acting upon it, an animated discussion occurs as to why that was happening, what caused it to happen, and so on. The actual experiment can be repeated later, in real-life, to further solidify the concept of air pressure in the students' minds.

### Reading

After reading a book with a well defined character, the student prepares an oral report from the viewpoint of the character. The student dresses as the character, talks and acts as they believe the character would, uses any props necessary to visually represent the character, and discusses the story elements as the person involved in the story. The report is videotaped, and can be used as a resource in the library to help students select interesting books. It provides an excellent way to motivate students to read, and to think critically about what they are reading.

### Social Studies

As an addition to letter-writing with pen pals, students can be "video pen pals". (This is especially educational when the pen pals are in another part of the country, or even in another country completely.) Students prepare messages to videotape and send to their pen pals. Critical thinking skills are employed as students analyze the

types of visuals they want to include in their videotape. For example, selected views of the school, the community, the landscape of the area, weather conditions, and so on, would give precise visual messages to the pen pals in a different location. Students should be encouraged to think carefully about what they want to show and why they think it would important to show those chosen visuals. Preparing their verbal explanation of the selected views, as recorded on the videotape, would further encourage their research and thinking skills.

## Hands-On Activities

Following are some activities that have been designed specifically for the purpose of developing critical thinking and spatial visualization through hands-on, visual experiences. Many of the activities described here involve geometry and/or reasoning skills, and have been shown in studies to be effective in developing not only math concepts, but also higher-order thinking skills. Other activities deal with pattern, attributes, and sequencing of visuals, skills that are necessary across the curriculum.

### Tangrams

Tangrams date back to the time of Pythagoras (500, BC), and have long been used in math classes. One tangrams set is made up of seven geometric pieces (one square, two large triangles, one medium triangle, two small triangles, and a parallelogram), and those pieces are used to create hundreds of geometric shapes. As students create shapes, understandings such as relationships of shapes to each other, transforming shapes (squares into rectangles or rectangles into parallograms, for example), and rotating shapes are developed.

### Pentominoes

The first known pentomino puzzle was published in 1906, and in 1953, Solomon W. Golomb at Harvard rediscovered the puzzles and coined the name "pentominoes". Pentominoes are geometric shapes formed by five squares joined together in different configurations. There are twelve shapes in one pentomino set. Students solve puzzles by using the pentominoes to completely cover a designated shape. (The designated shape must be covered, with no part of the pentomino pieces extending outside of the line of the shape.) In solving the puzzles, students develop concepts of measurement, number, and geometry, plus problem-solving, strategic thinking, and a sense of two-dimensional space. Students from pre-school through adulthood can use pentominoes at the appropriate difficulty level.

### D.I.M.E. Build-ups (Development of Ideas in Mathematics Education)

In this activity, students construct three-dimensional objects from two-dimensional drawings. Using foam plastic shapes, students look at drawings in the accompanying book (from easy to difficult) and attempt to build the real-life equivalent shape. Visual perspective, rotation, and perception, as well as geometry, problem-solving, and a sense of three-dimensional space are developed.

### Visual Thinking Task Cards

These task cards were created and published by Dale Seymour Publications. They provide problems in patterns, symmetry, congruence, perception and illusion, all leading to increased critical thinking skills. Students can attempt to solve the problems presented on the visual task cards individually, or with a partner or group.

### Resources: (for all materials above)

Dale Seymour Publications
P.O. Box 10888
Palo Alto, CA 94303-0879
(800)827-1100 Fax(415)324-3424

## Computers

Computer software and CD-ROMs frequently focus on using visuals to develop critical thinking skills. As students are required to manipulate, rotate, and interact with visuals on the computer screen, they are applying problem-solving and thinking skills.


BEST COPY AVAILABLE

### LOGO Programming Language

When Seymour Papert designed the LOGO language, his purpose was to provide even young students with a way to develop a logical, step-by-step approach to problem-solving. LOGO is very visual, incorporating geometry concepts as the "turtle" is moved about the screen creating endless numbers of shapes in various colors. Drawings from simple squares to detailed, full-color artistry can be created, depending upon the expertise of the user. The thinking process is developed as the student first builds a simple figure, adds other figures to make a procedure, and then combines procedures to form complicated designs.

### Computer Software

Programs such as HyperStudio and Authorware provide students with tools to help them analyze information, organize information visually, and create a presentation demonstrating their learning. Many other software programs focus directly on such skills as sequencing, spatial visualization, mirror imaging, perception, and visual problem-solving.

### Computer Drawing Programs

Various drawing programs, for different levels of expertise, are available for computers. Many programs include a graphics library that can be used to aid in the completion of pictures. One activity (Bazeli & Heintz, 1997) that utilizes the drawing capabilities of computers is to have students create a picture on the computer, during which they think about elements of a story to accompany their picture. The completed picture is printed, preferably with a color printer. (If a color printer is not available, students can color their black-and-white print out.) Each student then writes his/her own story to accompany the picture that was created, and the completed pictures and stories are displayed for all to enjoy.

## Visual Analysis

Visual analysis and perception are normally taught to children at very young ages, with toys designed to help teach such skills as determination of color, basic geometric shape discrimination, and shapes of letters of the slphabet. In early school years, instruction focuses on visual discrimination of letters and numbers as children begin to learn to read and perform math computations. However, that instruction and practice with visual analysis and perception tends to slow down or even stop as students reach the ages of seven or eight. Because of the visual nature of communication in our world, visual analysis and perception should continue to be taught and developed at all ages. Following are some activities that can help to develop those skills.

### *Animalia*, by Graeme Base

This book contains wonderful, colorful, and very detailed drawings focusing on each letter of the alphabet. Each page depicts many objects whose name begins with the designated letter. Vocabulary development is enhanced by using this book, as well as visual discrimination and perception, and it can be used at all age levels. A teacher can use one page on a transparency, and ask the students to list as many objects as they can. Students can work individually or in groups. Posters of the pages in the book are also available, which can be posted around the room, again affording groups of students the opportunity to view a page at the same time. After experiencing the analysis of Base's drawings, students can be encouraged to create their own alphabet pages, with their own hidden drawings of objects. This activity causes students to run to the encyclopedia, dictionary, and other resource materials to locate more objects beginning with the designated letter.

### *The Art of Bev Doolittle*

Bev Doolittle has become known for her "camouflage" art. Embedded in her beautiful water-color paintings of wildlife scenes are faces or images of Native Americans, animals, or other pictures that contribute great meaning to the painting. As students carefully analyze her paintings, wonderful discussions can occur centering around conservation issues, environment and habitat, and historical/cultural interactions with nature. Not only do students become better critical viewers, but

they also develop some affective attitudes regarding our environment on earth.

### Resources:

*Animalia*
by Graeme Base
Harry N. Abrams, Inc., Publisher
New York

*The Art of Bev Doolittle*
Text and Poems by Elise Maclay, Edited by Betty Ballantine
The Greenwich Workshop, Inc.
30 Lindeman Drive
Trumbull, CT 06611

### Photography

Photographs can be a very exciting resource for critical viewing activities. Students can produce their own or find examples from current magazines such as *National Geographic* or even *Rolling Stone*. Students can bring in favorite family photographs to discuss their meaning and share it with others, or they can discover the visual elements such as shape, color, pattern, texture, and so on, in photographs they have found in print. Of course, many photographs are available on the World Wide Web as well, and can be saved for analysis and sharing, printed, or used in student productions and reports. Students can analyze historical and current events, uncover biography information, and learn the critical aspects of science or geography topics using the WWW or encyclopedic CD-ROM materials as sources of excellent photography. Even posters, music or sports pictures, and advertisements can be sources of photographs for analysis, and can lead to discussions of the manipulative techniques used for advertising or the creation of reality from non-reality using computer-manipulated images as photographs. Students can focus on photographic images as an activity to encourage writing, develop autobiographies, or detail events and facts for reports.

### Conclusion

The many activities briefly discussed in this article should give educators some ideas for starting to use viewing skills activities to foster critical thinking and problem solving. They should find that these activities are motivating, exciting, active, and engaging. They help make critical thinking activities relevant, meaningful, and integrated into the usual curriculum. In addition, using popular media as a source for visual thinking and critical viewing skills activities help create a positive attitude towards critical thinking and classroom analysis activities. Using the media of our culture links critical thinking to life in a way that keeps critical thinking from being isolated or seeming too difficult for students. And of course, using viewing activities is not only motivating, but it is challenging, fun, and can enhance communication skills among students while they develop their critical thinking skills as well.

Students benefit from sharing ideas, from discussing differences in perceptions or opinions, and from working together in these activities to develop their critical thinking skills. They gain valuable and valued information, and may even change their attitudes about learning, when challenged to develop their own critical perception and analysis abilities as part of their regular school day. Helping students discover their own thinking skills and relate them to communication and visual skills will help them prepare for the world they face as we enter the new century.

### References


Bazeli, M. (1991) *Effects of visual literacy instruction upon the measured cognitive ability of fourth- and fifth-grade students.* Doctoral dissertation, Northern Illinois University.

Bazeli, M., & Heintz, J. (1997). *Technology across the curriculum: Activities and ideas.* Englewood, CO: Libraries Unlimited

Considine, D. & Haley, G. (1992). *Visual messages: Integrating imagery into instruction.* Englewood, CO: Teacher Ideas Press, a division of Libraries Unlimited, Inc.





BEST COPY AVAILABLE

Goldstone, B. (1989). Visual interpretation of children's books. *Reading Teacher, 42*(8), 592-595.

Goodman, J. (Spring, 1995). Change without difference: School restructuring in historical perspective. *Harvard Educational Review, 65* (1), 1-29.

Lacy, L. (1988). Thinking skills and visual literacy. In R. Braden, B. Braden, D. Beauchamp, & L. Miller (Eds.), *Visual literacy in life and learning: Readings from the 19th Annual Conference of the International Visual Literacy Association* (33-40). Blacksburg, VA: Virginia Tech University.

Limberg, V. (1988). Ethical considerations in visual literacy. In R. Braden, B. Braden, D. Beauchamp, & L. Miller (Eds.), *Visual literacy in life and learning: Readings from the 19th Annual Conference of the International Visual Literacy Association,* (396-401). Blacksburg, VA: Virginia Tech University.

Mann, J. (June, 1994). Learning to read TV. *The Visual Literacy Review, 24,* (3), 1-2.

Payne, B. (1993). A word is worth a thousand pictures: teaching students to think critically in a culture of images. *Social Studies Review, 32*(3), 38-43.